

CYBERBULLIES, CYBERVICTIMS AND CYBERBULLIES-VICTIMS: DISCRIMINANT FACTORS IN PORTUGUESE ADOLESCENTS

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ABSTRACT: Enhancers of new and positive opportunities and learning, new technologies are also promoters of risks to the health and well-being of young people. Cyberbullying is one of those risks. The aim of this study was to analyse the differences between cyberbullies, cybervictims and cyberbully-victims for individual, relational and contextual factors. This is a Cross-sectional study. Results showed that cyberbully-victims reported higher alcohol consumption, as opposed to the increased drug use revealed by cyberbullies. Cybervictims reported more emotional symptoms, such as fear and sadness, and less night outs. Cyberbullies were more often involved in fights, and had an easier access to a larger amount of money and were more easy making friends, when compared to cybervictims. Based on the results, it is crucial to develop a greater awareness and education of parents and youth about the dangers of cyberbullying, together with the monitoring of technological development. A strong argument is also made related to the need of the inclusion of youth participation in the definition of public policies to prevent cyberbullying, as well as the need to focus not only in the prevention of cyber-peer related violence, but also to focus on violence-free, positive peer relationships, both virtual and in presence.

Keywords: cyberbullying, emotional symptoms, risk behaviours, relational factors, school environment, adolescents

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In a technological age in which the use of new technology begins increasingly early, dominating the time and lives of many young people, new health problems emerge. Although the electronic media create new and positive social and learning opportunities, is also enhancer of some risks (David-Ferdon & Hertz, 2007). Cyberbullying is one of those risks. Defined as an aggressive, intentional and repetitive behavior, perpetuated through new technologies (Kowalski, Limber & Agatson, 2012; Bauman, 2013; Hutson, 2016), cyberbullying is an emerging public health problem (David-Ferdon & Hertz, 2007; D'Auria, 2014; Selkie, Kota, Chan & Brown, 2015; Matos & Ferreira, 2015).

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In a review of studies conducted by Garaigordobil (2011), 40-55% of the students were somehow involved in cyberbullying behaviors, as cyberbullies, cybervictims or merely as observers: 20-50% of the students reported victimization experiences; 2-7% of these cases were severe victimization.

Even if it is a universal problem, its prevalence varies from study to study and from country to country. In a meta-analysis of the literature about the prevalence of cyberbullying compared to traditional bullying, Modecki, Minchin, Harbaugh, Guerra, and Runions (2014) found that cyberbullying is less prevalent than traditional bullying, suggesting that the form (online vs offline) may be less important than the behaviour and may reflect different methods of enacting similar behaviours. In Portugal, in the framework of the Health Behavior in School-aged Children Study (HBSC) of the World Health Organization (WHO), conducted with 6026 students from 6th, 8th and 10th grade ($M = 13.77$ years, $SD=1.68$), results showed that 11% of the students were involved in this form of bullying (Matos, Simões, Camacho, Reis & Equipa Aventura Social, 2015). Very similar to traditional bullying, cyberbullying has different predictors, impact on health and well-being, as well as different characteristics of the involved actors (Matos & Ferreira, 2015).

With strong consequences in the youth well-being (Vieno et al., 2014), cyberbullying represents a serious risk to self-esteem, academic performance and emotional well-being (Cowie, 2013), promoting strong and negative emotions (Spears, Slee, Owens & Bruce, 2009), as sadness and fear in cybervictims (Ackers, 2012), and feelings of guilt and shame on cyberbullies (Gianesini & Brighi, 2015). Participants in cyberbullying behaviors reveal a higher economic status (Wang, Iannotti & Nansel, 2009) holders of an upper financial capacity.

Characterized by a weak academic performance, as well as cybervictims, cyberbullies are less committed and linked to school (Baldry, Farrington & Sorrentino, 2015). Cyberbullies have more aggressive characteristics, substances use and exclusion behaviours (Chan & Greca, 2016). The impact of the participation in school violence related situations, tobacco, alcohol and illegal drugs use is recognized in anticipation of victimization and provocation behaviors (Pelfrey Jr. & Weber, 2013).

According to Wang, Iannotti and Nansel (2009), cyberbullying does not relate to the number of friends, and perceived social competence is higher in cybervictims than in cyberbullies (Romera, Cano, García Fernández & Ortega-Ruiz, 2016). A lower number of friendship relationships and optimism in their description, as well as a lower acceptance by peers (Nixon, 2014) is common in cyberbullies.

To our knowledge, there is only one study that has studied the discriminant factors between cyberbullies, cybervictims and cyberbully-victims. Bayraktar, Machackova, Dedkova, Cerna e Sevcikova, in 2015, studied a random sample of 12 to 18 years old Czech adolescents and results have shown that cyberbullies and cyberbully-victims, mostly boys, reported lower self-control and offline aggression, compared to cybervictims; cyberbully-victims scored higher on those dimensions, compared to cyberbullies.

Thus, given the inability to extinguish all the risks associated with technological advances, it is important that parents and youth are alert to the dangers of cyberbullying, and track the progress of the available tools to prevent these behaviors (D'Auria, 2014). More important than the number of hours that youth spend online, it is what exactly they do online (Gamito, Morais, Oliveira, Brito, Rosa & Matos, 2016). Thus, so that new policies can be adapted to this reality, it is essential to understand the real needs of young people, giving priority to "their voice" in the identification of problems and solving strategies, along with their integration in the planning, implementation and evaluation of interventions aimed to their generation (Matos et al., 2015).

The goals of the present study were to analyse the differences between cyberbullies, cybervictims and cyberbullies-victims for individual, relational and contextual factors.

METHOD*Participants*

The 2014 wave of the Portuguese sample of the HBSC included 6026 adolescents, 47,7% male, aged between 10 and 19,92 years old (mean age of 13,77 years old, $SD= 1.68$), in the 6th (35.8%), 8th (39.1%), and 10th school year (25.1%), randomly assigned from national schools and stratified, representing all the country.

Table 1 shows the demographic characteristics of the sample. Details on the other demographic characteristics can be found in Matos, Simões, Camacho, Reis & Equipa Aventura Social (2015).

Table 1.
Demographic characteristics of the participants

	<i>N</i>	<i>%</i>	<i>M</i>	<i>SD</i>	<i>Range</i>	<i>Skweness</i>	<i>Kurtosis</i>
Gender							
Male	2872	47.7					
Female	3154	52.3					
School Grade							
6 th year	2157	35.8					
8 th year	2358	39.1					
10 th year	1511	25.1					
Region							
North	2506	41.6					
Lisbon and Vale do Tejo	1217	20.2					
Centre	1031	17.1					
Alentejo	755	12.5					
Algarve	517	8.6					
Age	6026	100	13.77	1.68	10-20	.202	-.825

Measures

The questionnaire (Currie, et al., 2012) includes a demographic data section and the assessment of school environment, alcohol, drugs and tobacco consumption, peer related violence, physical activity and hobbies, nutrition, security, psychosocial health, general symptoms, sexuality, social relationships and social support. Each questionnaire requires about 55 minutes to be administered (see Table 2).

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Table 2.

Items used and range

Items	Range
Smoking consumption	1 – 4 (everyday/don't smoke)*
Alcohol consumption	1 – 5 (everyday/never)*
Drugs consumption	1 – 4 (never/regularly)
School involvement	1 – 4 (like it very much/not at all)*
Relationships with peers	1 – 5 (strongly agree/strongly disagree)*
Peers attitudes	1 – 5 (strongly agree/strongly disagree)*
Peers acceptance	1 – 5 (strongly agree/strongly disagree)*
Security feelings at school	1 – 5 (always/never)*
Fear	1 – 5 (almost everyday/rarely or never)*
Sadness	1 – 5 (almost everyday/rarely or never)*
Rejection feelings	1 – 5 (strongly agree/strongly disagree)*
Withdrawal at school	1 – 5 (never happened during the last 2 months/several times during week)
Involvement in fights	1 – 5 (never/four times or more)
Money	0 – 500 euros
Friends in everyday life	1 – 4 (none/three or more)
Virtual friends	1 – 4 (none/three or more)
Making friends	1 – 4 (very easy/very difficult)*
Time spent with friends after school	0 – 6 (none/ 6 days)
Night outs	0 – 7 (none/ 7 days)
Cyberbullying	0 – 4 (never involved; cybervictim; cyberbully; cyberbully-victim)

* reverted items.

Procedure

The schools that took part on the sampling process were randomly selected from the national schools list, and stratified by educational regions. In each school, a random selection of classes was carried out and the questionnaire was administered by the teachers in the computer room, online, assisted by the NT teachers, after parental and students' informed consent to volunteer and anonymous participation in the study. Details on the procedures for data collection in the HBSC Study can be consulted in Matos, Simões, Camacho, Reis & Equipa Aventura Social (2015).

Statistical analysis

SPSS 21.0 for Windows (SPSS, Chicago IL, USA) was used in order to carry out univariate ANOVAs and discriminant multivariate analyses, comparing the different groups. Post-hoc tests were performed according to Tukey method.

RESULTS

Table 3 shows the descriptive data obtained for each of the three groups, cybervictims, cyberbullies and cyberbully-victims.

Table 3.

Comparisons, according to cyberbullying status, for emotional symptoms, substances use, contextual and relational factors

	Cybervictims (a) (N = 217)		Cyberbullies (b) (N = 95)		Cyberbullies- victims (c) (N = 142)		F
	M	SD	M	SD	M	SD	
Smoking consumption	.38	1.49	.57	1.71	.44	1.63	.55
Alcohol consumption	.30	1.15	.63	1.69	.75	1.25	6.15** ^{c>a}
Drugs consumption	.11	1.21	.93	2.56	.32	1.69	6.73*** ^{b>a,c}
School involment	-.14	1.11	-.56	1.12	-.38	1.12	6.33*** ^{a>b}
Relationships with peers	-.16	1.02	.02	1.11	-.20	1.24	1.62
Peers attitudes	-.12	.99	-.26	1.33	-.14	1.15	.60
Peers acceptance	-.26	1.12	-.26	1.22	-.16	1.17	.44
Security feelings at school	-.37	1.1	-.22	1.18	-.23	1.14	1.16
Fear	.58	1.36	.20	1.14	.34	1.23	4.16* ^{a>b}
Sadness	.70	1.37	.23	1.15	.42	1.25	6.06** ^{a>b}
Rejection feelings	.26	1.03	.22	1.15	.03	1.02	2.75
Withdrawal at school	.40	1.36	.40	1.36	.30	1.37	.31
Involvement in fights	.36	1.28	1.32	1.65	.71	1.54	17.8*** ^{b>a,c}
Money	-.01	.73	.35	1.66	.10	1.15	3.6* ^{b>a}
Friends in everyday life	-.17	1.17	-.19	1.28	-.18	1.29	.01
Virtual friends	.22	1.14	.39	1.28	.39	1.27	1.3
Making friends	.23	1.11	.11	1.10	.01	1.15	3.6* ^{b>a}
Time with friends after school	.02	.99	.25	1.01	.14	.97	2.1
Night outs	.18	1.16	.83	1.51	.53	1.45	9.5*** ^{a<b,c}
Well-being	.46	1.19	-.07	1.18	-.21	1.11	5.01** ^{b>a}

Note: * $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$.

Significant differences were found in alcohol, $F(2; 587) = 6.15$, $p = .002$, and drugs consumption, $F(2; 430) = 6.73$, $p = .0001$. Cyberbully-victims reported consuming more alcohol than victims whereas cyberbullies reported consuming more drugs compared to cybervictims and cyberbully-victims.

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Cybervictims reported a higher school involvement, $F(2; 587) = 6.33, p = .002$, and less well-being, $F(2; 530) = 5.01, p = .007$, compared to Cyberbullies.

Group differences were also found in emotional symptoms related to fear, $F(2; 587) = 4.16, p = .016$, and sadness, $F(2; 587) = 6.06, p = .002$. Cybervictims reported more fear and sadness compared to cyberbullies and cyberbully-victims.

Cyberbullies reported higher involvement in fights, $F(2; 582) = 17.8, p = .0001$, compared to cybervictims and cyberbully-victims, having access to higher amounts of money, $F(2; 491) = 3.6, p = .026$, and making friends more easily, $F(2; 524) = 3.6, p = .013$, compared to cybervictims.

Finally, cyberbullies and cyberbully-victims reported having more night outs, $F(536) = 9.5, p = .0001$, than cybervictims.

A multivariate discriminant analysis was carried out, using stepwise method, allowing to successfully discriminate the three groups, and showing one statistically discriminant function, Wilks' $\lambda = .86; \chi^2(6) = 52.486; p = .0001$. The second discriminant function was not statistically significant.

The coordinates of the centroides for the three groups are presented in Table 4.

Table 4.
Centroides coordinates for the significant discriminant function

	F1
Cybervictims	.344
Cyberbullies	-.620
Cyberbullies-victims	-.278

According to these coordinates, Figure 1 represents the three groups (cyberbullies, cybervictims and cyberbully-victims), from their centroides within the discriminant function.

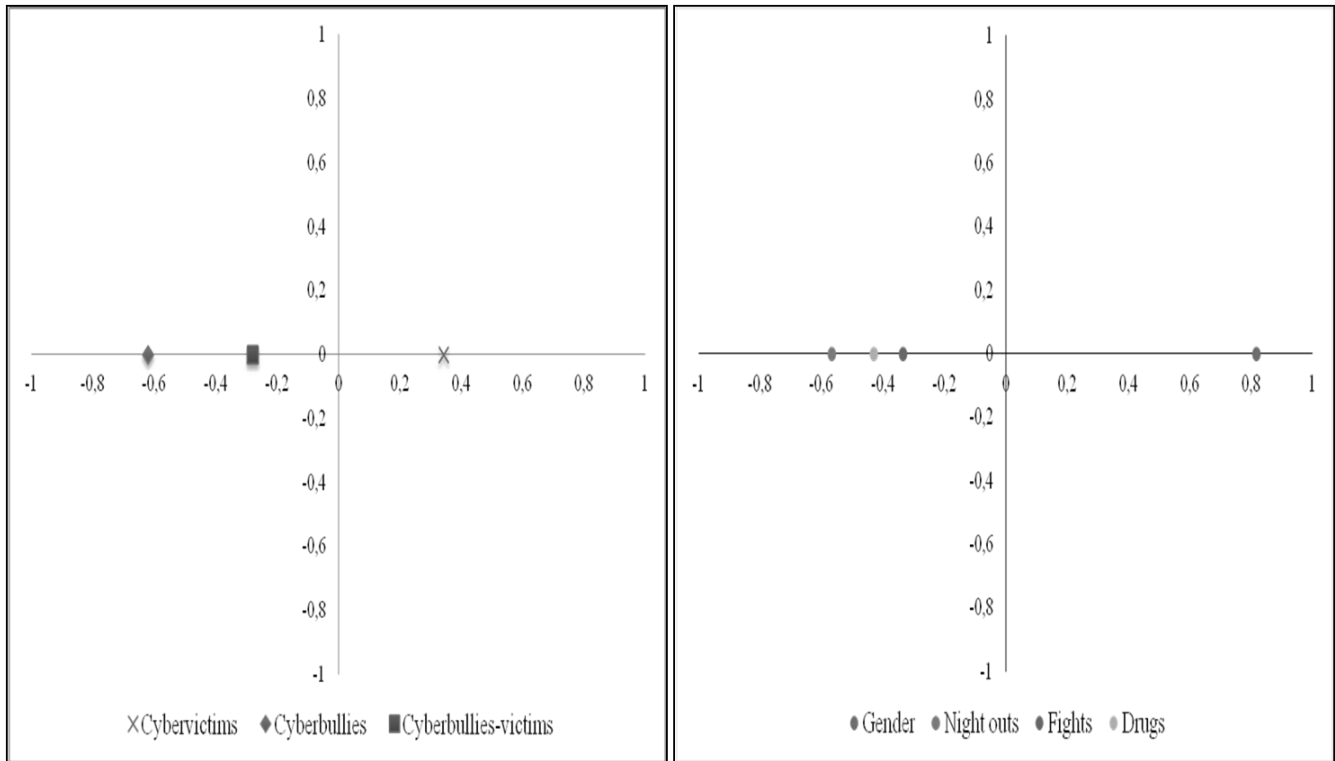


Figure 1.

Graphical representation of the groups based on the centroides values and of the discriminative variables

The graphical representation of the function discriminated the three groups. Cybervictims are graphically represented on the positive side of the function. Cyberbullies and cyberbully-victims are represented on the negative side of the function. These results show that the discriminant function discriminated cybervictims from cyberbullies and cyberbully-victims.

The description of the discriminant function from the studied variables ordered by the magnitude of the correlations with the discriminant function can also be seen in Figure 1. According to Hair, Anderson, Tatham and Black (1998), we considered correlations above 0.30 statistically significant.

Thus, the first function was defined on the positive side for gender and, on the negative side, for nights out, drugs consumption and involvement in fights.

Additionally, Table 5 shows that the analysis of the discriminant function indicated that 84.4% of cybervictims, 17.6% of cyberbullies and 29% of cyberbully-victims were correctly classified. The global results of the classification, with 56.1% of the participants correctly classified, have shown that gender discriminated cybervictims from cyberbullies and cyberbully-victims, that nights out and drugs consumption discriminated cyberbullies from cyberbully-victims and cybervictims and, finally, that involvement in fights discriminated cyberbully-victims from cyberbullies and cybervictims.

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Table 5.
Matrix structure

	F1
Gender	.818*
Night Outs	-.567*
Involvement in fights	-.335*
Making friends	-.262
Money	-.261
Well-being	-.206
Liking school	.127
Drugs consumption	-.429*
Alcohol	-.212
Sadness	.129
Fear	.090

* correlation values superior to .30 between the variable and the discriminant function.

Table 6.
Classification results

	Predicted group membership (%)		
	Cybervictims	Cyberbullies	Cyberbullies- victims
Original			
Cybervictims	84.4	2.4	13.3
Cyberbullies	51.5	17.6	30.9
Cyberbullies- victims	62.9	8.1	29

56.1% of the original grouped cases correctly classified.

DISCUSSION

Resulting from the emergence of new technologies, the dependence of the new tools of connectivity and growing of online disinhibition (Aboujaoude, Savage, Starcevic & Salame, 2015), cyberbullying constitutes currently an universal health risk, strongly influenced by personal and contextual factors (Casas, Del Rey & Ortega-Ruiz, 2013).

In this research, in order to foster greater knowledge, was supported the development of new interventions or adapt existing ones, an analysis of the differences was carried out, between the different actors involved in cyberbullying behaviours, cyberbullies, cybervictims and cyberbully-victims, regarding to their individual, relational and contextual factors (Matos & Ferreira, 2015).

In present study, statistically significant differences were found for alcohol and drugs consumption. Cyberbully-victims reported drinking more alcohol than cybervictims, and cyberbullies reported consuming more drugs and involving fights compared to cybervictims and cyberbully-victims. Youth who perpetuate aggressive behaviors against their peers, excludes them socially, and are clearly more aggressive, report more often substance use (Chan & Greca, 2016) or an increase in its use. Cyberbullies reveal aggressive and violent behaviors (Nixon, 2014), contrasting with the emotional symptoms of fear and sadness, reported by

victims. Promoter of strong and negative emotional behaviors (Spears, Sleep, Owens & Bruce, 2009), cyberbullying hinders the request for help of victims (Ackers, 2012).

Compared to cyberbullies, cybervictims are characterized by less facility in making friends, have poor social skills (Baldry, Farrington & Sorrentino, 2015) and scarce relationships with their peer group (Antoniadou, Kokkinos & Markos, 2016). Despite they report a greater school involvement than cyberbullies (Baldry, Farrington & Sorrentino, 2015), the perception of lower social support (Calvete, Orue, Estévez, Villardón & Paddila, 2010) and the relational problems, as the lack of close friends or significant relations (Gross, Juvonen & Gable, 2002), contribute to a lower perception of well-being.

Cyberbullies condition is associated with a greater easiness of access to higher amounts of money, supporting the idea that a higher socio-economic status increases the risk of involvement in cyberbullying behaviors, quite possibly due to the availability of technological equipment (Wang, Iannotti & Nansel, 2009). Young people with a lower socioeconomic status are more likely to be cybervictims (Sampasa-Kanyinga & Hamilton, 2015). Knowing that sooner youth start using the internet and electronic devices, faster they become targets (Baldry, Farrington & Sorrentino, 2016), these results prove to be urgent the adoption of prevention measures to this behavior.

On the basis of a multidimensional perspective, focused on the involvement of youth in the process of identification of their necessities and proposals for their problems (Matos, 2014; Matos, 2015; Matos et al., 2015); the identification of protecting factors (communication with family, school sense of belonging, teachers' support, neighborhood sense of belonging, and the fathers role) (Chester, Magnusson, Klemmer, Spencer & Brooks, 2016); the adaptation or development of school programs to prevent bullying, focusing not only on this traditional form of violence but also in cyberbullying (Brown, Demaray & Secord, 2014); a greater awareness and education of youth (Alim, 2016), as well as higher alert to the dangers by parents (D'Auria, 2014); and the use of technological solutions, identified by young people as the most effective strategy in combating cyberbullying (Kowalski, Giumetti, Schroeder & Lattaner, 2014), are an efficient and perdurable work that can be carried through.

A strong argument is also made related to the need to include young people participation in the definition of public policies to prevent cyber peer-related violence, as well as a need to focus not only in the prevention of cyber-peer related violence, but also to focus on violence-free, positive peer relationships, both virtual and in presence.

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